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A comparison of teacher stress and school climate across schools with different matric success rates

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Our aim was to investigate differences in teacher stress and perceptions of school climate among teachers from schools with differing matriculation success rates in the Limpopo province of South Africa. Two schools with matric pass rates of 100% and two schools with matric pass rates of less than 25% were selected from a list of schools provided by the province's Educational District Circuit. The schools were matched in terms of area, size, resources, and equipment. Thirty-three teachers from the high performing schools and forty-two teachers from the poor performing schools participated in the study. Student's t tests were used to assess the differences between the schools on the variables under investigation, and the results showed the teachers' experience of stress across the different schools was not significantly different, but significant differences did emerge with regard to school climate. The implications of these findings for the study population are discussed.

Keywords: school climate; school performance; teacher stress

Introduction

It is widely acknowledged that the provision of quality education in South African schools is one of the greatest challenges facing South Africa in the twenty-first century. A skilled, sophisticated workforce is a prerequisite to competing in today's global, technology driven economic environment and education is key to developing such a workforce. However, as a result of the apartheid era's grossly inequitable allocation of resources in relation to education, and the espoused policy of apartheid to provide sub-standard education to black South Africans, many South African schools are ill-equipped to meet this challenge. Indeed, the performance of South African schools as measured by matric pass rates is dire. There was a decline in the pass rate of the Department of Education and Training (DET) from 48% in 1985 to 41% in 1991 and again to 38% in 1993 (Calitz, 1998). The results have not been better since the dissolution of the DET after the 1994 democratic elections. Limpopo, the former Northern Province, has experienced a particularly low matric pass rate. In 1997, the pass rate in Gauteng was 52%, in KwaZulu-Natal 54%, in the Free State 42%, and in Northern Province 32% (Snyman 1998). In 2003, the two provinces with the highest pass rates were Northern Cape (91%) and Western Cape (87%), and the lowest two provinces were Limpopo with 70% and Mpumalanga with 58% (Monare, 2003). Although the matric pass rate has improved more recently from 47% in 1997 to 73% in 2003, the quality of the results is still poor. For example, more than two thirds of pupils who wrote higher grade mathematics failed, and 50% of those who wrote

higher grade physical science also failed that subject in 2003 (Molakeng, 2004; Motloun, 2004).

However, it appears that not all schools fall into the above scenario. For example, from the popular literature, Molokoane (1998) and Snyman (1998) identified two schools from the former Northern Province which drew the attention of the whole country because of their different matric pass rates. The first school produced excellent results — every pupil passed matric with exemption — while in the other school none of the pupils who wrote the end-of-year examination passed. While this example is from a number of years ago, recent matric results show similar patterns. For example, Makgotho (2004) indicates that the Limpopo Education Department has identified 17 schools that performed very badly with regard to Grade 12 results, with pass rates ranging from 0% to 20% while there are those which performed well. Clearly, this suggests a need to understand how the environments, or the climates, of schools with different success rates differ as well as how teachers' experiences differ in those different schools. Obtaining insight into such issues may help in finding ways of improving teachers' performance. However, few empirical studies appear to have explicitly aimed to compare the experiences of teachers in schools with different success rates.

Our aim, therefore, was to address this lack and investigate teachers' experiences in schools which have different success rates, but are situated in the same rural area and which offer similar subjects. Specifically, the aims in this study were to compare teacher stress and school climate across schools with different success rates.

Theoretical framework

There appears to be no theoretical framework that explicitly models a multivariate approach to school performance from an organisational behaviour perspective. Rather, a range of individual variables, including teacher stress, school climate, teacher commitment, learner characteristics, and social factors such as socio-economic status have been assessed, but there appears to be no over-arching theoretical framework which links these variables together as predictors of school performance.

Teacher stress and school climate were specifically chosen as the variables of interest in the current study, because of the previous research both internationally and in South Africa, which has identified these as important factors influencing teacher attitudes and school performance (Hausman & Goldring, 2001; McEvoy, 2000; Ngidi & Sibaya, 2002; Van Zyl & Pietersen, 1999). Socio-economic status has also been explored (Smith & Hoy, 2007) and this was controlled for in the current study through the choice of schools. Indeed, the anomalous situation in South Africa, of schools which appear entirely similar in objective criteria such as location (rural), resources (poor — no library), student : teacher ratios (approximately 70 students per class) yet which produce vastly differing results, provides a unique opportunity to investigate these variables from a novel and original perspective.

Although there is little in the way of theorizing around school performance and the variables currently under investigation, the literature on the individual variables by themselves is theoretically rich. In the following sections a brief description of stress and climate theory is presented.

Teacher stress

Numerous definitions of stress exist in the literature and there is some controversy over the nomenclature as to whether the term *stress*, *stressor*, or *strain* should be used to define various aspects of stress (Thatcher & Miller, 2003). Buunk, De Jonge, Ybema & De Wollf (1998:148) identify three broad theoretical approaches to stress which may determine the ways in which the term can be used. They argue that some theories address stress primarily as a stimulus — “in other words, as an event or situation that affects the individual and is potentially harmful”. This theoretical approach is associated with the term *stressor* and implies the potential for stress inherent in a particular situation/environment. Many workplace studies of stress adopt this theoretical approach as they attempt to identify the work-related factors that place individuals’ physical and psychological health at risk and which contribute to negative organisational outcomes.

Alternatively, stress may be regarded as the “psychological or physiological response of the organism to an external threat” (Buunk *et al.*, 1998:148). The term *strain* is often used to depict this approach to stress. Selye’s (1978, cited in Buunk *et al.*, 1998) General Adaptation Syndrome (GAS) is the classic theory within this approach as it argues that stress comprises the non-specific reaction of the organism to any form of external threat (within the stress terminology the external threat may be termed the *stressor*). One of the key components of this theory is the identification of the potential long term negative effects of stress.

Finally, some theorists have developed mediational conceptualisations of stress “which focus on the cognitive, evaluative and motivational processes that intervene between the stressor and the reaction” (Buunk *et al.*, 1998:148). Lazarus and Folkman’s (1984) cognitive model of stress and coping is perhaps the best known approach to stress within this theoretical framework. They define stress as “a relationship between the person and the environment that is appraised by the person as taxing or exceeding his/her resources and endangering his/her well-being” (1984:21). Key to this theory is the importance of individual factors in the stress appraisal process. This approach has been central to current thinking on workplace stress and may be summarised in definitional terms, whereby stress “refers primarily to the occurrence of negative emotions that are evoked by demanding situations” (Buunk *et al.*, 1998:149). While it is acknowledge that mediational theories of stress represent the most comprehensive conceptualisation of stress, the purpose in the current study was to compare the stressful potential of two work environments, rather than the total stress process as it occurs between individuals and environments. Therefore the theoretical framework that guides this study

is the situational approach to stress, as we explored perceived differences in the demands presented by the different schools.

From an empirical perspective, concern over teachers' stress has generated a large amount of research both internationally and in South Africa. For example, research has examined the causes and consequences of stress and burnout amongst teachers (Buwalda & Kok, 1991, Monteith, Smith & Marais, 2001; Ngidi & Sibaya, 2002, Van der Linde *et al.*, 1999) the impact of personality characteristics on the work-related stress of teachers (Ngidi & Sibaya, 2002) and the differences in stress across different hierarchical levels in schools (Monteith *et al.*, 2001). The findings of these studies all point to the high levels of stress teachers experience and the impact that this may have on their performance. It may be expected therefore that teacher stress will differ across schools with differing levels of performance.

School climate

According to Reichers and Schneider (1990:22)

climate is widely defined as the shared perception of 'the ways things are around here'. More specifically, climate is shared perceptions of organisational policies, practices and procedures, both formal and informal.

These shared perceptions of organisational policies, practices and procedures enable individuals to make sense of ambiguous and conflicting organisational stimuli and cues, predict outcomes and gauge the appropriateness of their organisational activities (Kopelman, Brief & Guzzo, 1990). Organisational climate therefore has a functional role in shaping and directing the behaviour of individuals within organisations. The climate construct has been applied to a variety of organisational contexts, including service climate, safety climate and, within the educational context, it has been termed school climate

Various definitions of school climate exist. For example, McEvoy (2000) states that school climate refers to the attitudes, beliefs, values and norms that underlie the instructional practices and the operation of a school. Kelley, Thornton and Daugherty (2005) see school climate as a set of shared values, interpretations and similar definitions of purpose and Hoy and Miskal (1987: 225, cited in Rovai, Wighting & Liu, 2005:363) define school climate as "the set of internal characteristics that distinguishes one school from another and influences the behaviour of people". The latter definition which establishes school climate as one of the key characteristics that distinguish different schools from one another clearly identifies school climate as a critical variable to consider in the current study.

From a theoretical perspective, two frameworks for studying school climates have been identified (Hoy, Smith & Sweetland, 2002/2003). The first, which derives from the notion of climate being a manifestation of the personality of a school, evaluates school climate on a continuum from open to closed (Hoy *et al.*, 2002/2003). An open school climate is based on respect, trust and honesty, with opportunities for teachers, learners and school management to engage co-operatively and constructively with one another

(Sherblom, Marshall & Sherblom, 2006). The other perspective for examining school climate draws on the notion of organisational health. Healthy organisations are characterised by an ability to survive within their environments and to adapt and cope with long term challenges (Miles, 1969, cited in Hoy *et al.*, 2002/2003). Hoy *et al.* describe a healthy school as follows:

A healthy school climate is imbued with positive student, teacher and administrator relationships. Teachers like their colleagues, their school, their job and their students and they are driven by a quest for academic excellence. They believe in themselves and their students; and set high, but achievable goals. Students work hard and respect others who do well academically. Principal behaviour is also positive ... Principals have high expectations for teachers and go out of their way to help teachers (2002/2003:39).

While openness and health represent distinct constructs in relation to school climate they have some common characteristics and tend to be correlated with one another. A more parsimonious theoretical perspective was therefore developed by Hoy *et al.* (2002/2003) which encapsulates both frameworks in four dimensions — environmental press, which describes the relationship between the school and the community; collegial leadership which depicts the openness of the principal's leadership behaviour; teacher professionalism which describes openness of the relationships between the teachers; and academic press which addresses the relationship between the school and the students and the achievement motivation within the school. This four dimensional theory of school climate has been empirically validated by Hoy *et al.* (2002/2003) and was identified as a useful framework for guiding the climate dimension of the current research.

Previous research on school climate has clearly identified it as a factor impacting on school performance. For example, a study on schools in Michigan (McEvoy, 2000) revealed that school climate factors accounted for 63% of the variation in mean school achievement between low and high achieving schools. A number of other studies have also found relationships between various aspects of school climate and school or student achievement (Kelley *et al.*, 2005). While research has been done on school climate in South Africa (Van Zyl & Pieterse, 1999), this has not directly examined school climate and differing performance levels in schools — an issue that was addressed in the present research.

Research questions

The literature reviewed indicates that teacher stress and school climate could be amongst the drivers of differing success patterns in different schools. We intended to test this hypothesis through answering the following research questions:

1. Do teachers from the schools with different matric success rates perceive the same sources of stress?

2. Do teachers in schools with different matric pass rates experience the same levels of stress?
3. Is there any difference between teachers' perceptions of the school climate in schools with different pass rates?

Method

Participants and procedure

Teachers from four high schools with different matric success rates at one of Limpopo province's Educational District circuits, who volunteered to participate, constituted the sample. The chosen education circuit comprised 12 high schools. A list of high schools rated according to their recent matric results was used to select two schools with excellent pass rates, and two schools which produced pass rates of 100% were chosen from the list. The same list was used to select schools with poor matric results. Four schools at the bottom of the list, with less than 25% pass rates, were matched against the two schools which performed well. The process of matching was based on the availability of resources or equipment such as computers, libraries, and text books. Two bottom schools which best matched the schools with excellent pass rates were selected. The reason for the matching process was to make a comparison between schools which had more or less similar settings and equipment. For example, all four schools chosen had one computer in their possession and no libraries. They also all offered similar subjects.

As far as sampling was concerned, all the matric teachers from the four schools were invited to participate. A covering letter was sent to the teachers explaining the voluntary nature of the study as well as assuring teachers of confidentiality and anonymity. School type 2, which represented schools with excellent pass rates, had higher response rates (i.e. 90%) than school type 1, which represented schools with poor pass rates (response rate of 69.8%).

With regard to the demographic details of the sample, the average age of teachers from schools 1 and 2 (school type 1) was 41.21 and 37.05, respectively. The average age of the teachers from schools 3 and 4 (school type 2) was 38.4 and 38.1, respectively. All four schools had a majority of male teachers (57.1%, $n = 8$ in school 1; 78.9% $n = 13$ in school 2; 65%, $n = 13$ in school 3, and 53.8%, $n = 14$ in school 4). As far as tenure in teaching was concerned, none of the teachers from school 1 had less than 2 years service, while 70.14% ($n = 10$) had more than 12 years teaching experience. 5.3% ($n = 1$) of teachers from school 2 had less than 2 years experience and 52.6% had more than 12 years experience. 5% ($n = 1$) of teachers from school 3 had less than 2 years experience and 40% ($n = 8$) had more than 12 years experience. 23% ($n = 6$) of teachers from school 4 had less than 2 years experience and 42.8% ($n = 11$) had more than 12 years of experience. Therefore it appeared that, in general, the teachers across all four schools were predominantly male, middle aged, with substantial teaching experience.

Measuring instruments

A biographical blank was used to gather the demographic details of the sample as well as information on the schools. Teacher stress was assessed by means of the Job Stress Survey (Spielberger, 1991, cited in Monteith *et al.*, 2001) which has been used previously in South Africa to measure teacher stress (Monteith *et al.*, 2001). The scale asks participants to indicate the amount of stress they have experienced in relation to 30 factors, such as 'assignment of disagreeable duties' and 'lack of participation in policy-making decisions'. Monteith *et al.* (2001) report a Cronbach alpha coefficient of 0.92 in their use of the scale. The reliability of the Job Stress Survey in the current research was 0.78.

The Organisational Climate Index developed by Hoy *et al.* (2002/2003) was used to measure the climate of the schools. The Organisational Climate Index comprises 27 items with four sub-scales: collegial leadership, professional teacher behaviour, achievement press and institutional vulnerability. Items are scored on a 5-point scale from 'Strongly disagree' to 'Strongly agree'. Collegial leadership refers to the principal's social and goal-directed behaviour. A sample item for this sub-scale is "The principal is friendly and approachable". Previous research (Hoy *et al.*, 2002/2003) found the reliability of this sub-scale to be high — alpha coefficient = 0.94. The reliability of the sub-scale in the current study was 0.80. Professional teacher behaviour refers to collegial respect and mutual co-operation and support of colleagues. An example of an item from this sub-scale is "Teachers respect the professional competence of their colleagues". Hoy *et al.* (2002/2003) report an alpha coefficient of 0.88 for this sub-scale. The reliability coefficient in the current study was 0.77. The third sub-scale, achievement press, assesses the extent to which the school sets high but achievable standards and goals. A sample item is "students try hard to improve on previous work". The reliability for this sub-scale in previous research was reported as 0.92 (Hoy *et al.*, 2002/2003), and in the current study was 0.81. The sub-scale institutional vulnerability was excluded from the current study as it was not relevant to the school environment that was being assessed. The other three sub-scales comprising 22 items were therefore used to assess the different dimensions of school climate across the four schools.

Data analysis

The SAS statistical program was used to analyse the data. The collected data were analysed by employing descriptive and inferential statistics. Analyses were performed on both individual scores and school means. Descriptive statistics were used to identify the different sources of stress and the severity of their impact on the teachers from the different schools. Stress ratings of 1 and 2 were regarded as indicators of low stress, a score of 3 was an indicator of moderate (standard) stress, while ratings of 4 and 5 indicated high stress (Monteith *et al.*, 2001). All the sources of stress which emerged with a mean intensity greater than 3 were regarded as potential stressors in such schools, while the factors with a mean intensity lower than 3 were not regarded as

possible stressors (Monteith *et al.*, 2001).

Descriptive statistics were also used to aggregate teachers' ratings of their levels of occupational stress at school-type level. The instrument used to measure school climate consisted of three sub-scales, namely, collegial leadership, professional teacher behaviour, and achievement press. Analyses were performed on each sub-scale. Analyses were first done at school-type level. School type 1 represented the schools with poor pass rates while school type 2 represented the schools with good results. A *t* test for independent samples (means) was used to establish whether the differences between the two school types were significant (Martella, Nelson & Marchand-Martella, 1999). Where appropriate, analyses at the school level were also conducted.

Results

Reliability of the measuring instruments

The reliability of each of the scales and sub-scales used in the study are presented in Table 1.

Table 1 Reliability of the measuring instruments

Measuring instrument	Number of items	N	Cronbach's α
Job Stress Survey	30	79	0.78
Collegial leadership	7	79	0.80
Professional teacher behaviour	8	79	0.77
Achievement press	7	79	0.81

Mean intensity and frequency distributions of stress sources

The mean intensity of stressful work-related events reported by the teachers was used to determine the factors perceived as being stressful at school-type level. The mean intensity of each source was compared to a standard (moderate) stressor which has a rating of 3. This meant that all stressors which had a mean intensity greater than 3 were regarded as teachers' stressors for that school, and stressors which had a mean intensity of less than 3 were not regarded as perceived stressors (Monteith *et al.*, 2001). The work-related events (stressors) which had a mean of 4.0 and above were considered highly stressful factors, while a mean between 3 and 4 indicated stressful work-related factors. All the stressors which had a mean below 3 were not considered as perceived stressors by the teachers.

Comparisons of sources of stress among teachers in the two school types (i.e. between schools with poor results and schools with good results) were made. The teachers from both school types perceived similar stressors. All work-related factors included in the stress questionnaire (i.e. item 1 – item 30) were reported as stressful by the teachers from school type 1. The teachers in school type 2 also perceived all factors as stressful except for item 12 (periods of inactivity) and item 13 (difficulty in getting along with colleagues). Tables 2 and 3 indicate the mean intensity and frequency distribution of both school types' sources of stress.

Table 2 Mean intensity and frequency distribution of school type 1's stress sources

Sources of stress	Max	Mean	Min	Stress intensity					
				Low		Moderate		High	
				N	%	N	%	N	%
Disagreeable duties	5.00	3.52	2.00	5	15.15	12	36.36	16	48.48
Overtime	5.00	3.36	1.00	9	27.27	7	21.21	17	51.51
Lack of opportunity to advance	5.00	4.09	3.00	0	0.00	6	18.18	27	81.81
New/unfamiliar duties	5.00	3.27	1.00	7	21.21	13	39.39	13	39.39
Colleagues not doing their work	5.00	3.97	2.00	4	12.12	4	12.12	25	75.75
Inadequate staff support	5.00	3.94	2.00	2	6.06	11	33.33	22	66.66
Dealing with crises	5.00	3.64	1.00	4	12.12	10	30.30	19	57.57
Lack of recognition	5.00	3.94	1.00	3	9.09	6	18.18	24	72.72
Doing tasks not in job description	5.00	3.12	1.00	10	30.30	11	33.33	12	36.36
Inadequate equipment	5.00	3.82	2.00	3	9.09	10	30.30	20	60.60
Increased responsibilities	5.00	3.25	1.00	6	18.18	14	42.42	13	39.39
Periods of inactivity	5.00	3.09	1.00	12	36.36	7	21.21	14	42.42
Difficulty with colleagues	5.00	3.18	1.00	10	30.30	7	21.21	16	48.48
Negative attitudes towards Educ. Dept.	5.00	3.73	1.00	5	15.15	7	21.21	21	63.63
Not enough staff	5.00	3.76	2.00	2	6.06	11	33.33	20	60.60
Making critical on-the-spot decisions	5.00	3.37	1.00	6	18.19	11	33.33	16	48.48
Insults from colleagues	5.00	3.91	1.00	4	12.12	6	18.18	23	69.69
Lack of participation	5.00	3.88	1.00	10	9.09	9	27.27	21	63.63
Inadequate salary	5.00	3.58	2.00	3	3.03	2	6.06	30	90.90

Table 2 continued

Sources of stress	Max	Mean	Min	Stress intensity					
				Low		Moderate		High	
				N	%	N	%	N	%
Competition for advancement	5.00	3.09	1.00	1	30.30	9	27.27	14	42.42
Inadequate supervision	5.00	3.73	1.00	5	15.15	5	15.15	23	69.69
Noisy work area	5.00	4.03	1.00	2	6.06	6	18.18	25	75.75
Frequent interruptions	5.00	3.58	1.00	5	15.15	8	24.24	20	60.60
Frequent changes from boring to most challenging activities	5.00	3.24	1.00	9	27.27	6	18.18	21	63.63
Excessive paperwork	5.00	3.61	1.00	4	12.12	9	27.27	20	60.60
Meeting deadlines	5.00	3.06	1.00	10	30.30	10	30.30	13	39.39
Insufficient personal time	5.00	3.31	1.00	7	21.12	10	30.30	16	48.48
Covering for other teachers	5.00	3.76	1.00	5	15.15	5	15.15	23	69.69
Poorly motivated colleagues	5.00	4.09	1.00	1	3.03	7	21.21	25	75.75
Conflicts with other departments	5.00	3.33	1.00	8	24.24	7	21.21	18	54.54

Results of *t* tests

To establish whether differences between schools with poor matric success rates and schools with excellent success rates were significant, *t* tests were performed and Table 4 illustrates the results. The *t* test results indicated significant differences ($p < 0.0001$) between the two school types' organisational climate dimensions, i.e. collegial leadership, professional teacher behaviour and achievement press. However, no significant differences were found to exist between the school types' overall level of occupational stress. It is possible that differences in perceived stressors may have been masked as a result of analysing the JSS as a single scale and combining the schools into school types rather than assessing differences between each school. It was therefore decided to conduct an ANOVA on each of the JSS items to identify significant differences in specific sources of stress across the four schools. The results of the ANOVA are presented in Table 5.

Table 3 Mean intensity and frequency distribution of school type 2's stress sources

Sources of stress	Max	Mean	Min	Stress intensity					
				Low		Moderate		High	
				N	%	N	%	N	%
Disagreeable duties	5.00	3.48	1.00	6	13.04	16	34.78	24	52.17
Overtime	5.00	3.35	1.00	6	13.04	20	43.48	20	43.48
Lack of opportunity to advance	5.00	3.50	1.00	8	17.39	15	32.60	23	50.00
New/unfamiliar duties	5.00	3.37	2.00	9	19.56	17	36.95	20	43.48
Colleagues not doing their work	5.00	3.72	2.00	6	13.04	12	26.09	28	60.87
Inadequate staff support	5.00	3.54	2.00	5	10.87	16	34.78	25	54.35
Dealing with crises	5.00	3.46	2.00	6	13.04	17	36.95	23	50.00
Lack of recognition	5.00	3.52	1.00	11	23.91	17	36.95	18	39.13
Doing tasks not in job description	5.00	3.22	1.00	13	28.26	16	34.78	17	36.95
Inadequate equipment	4.00	3.34	2.00	10	21.73	12	26.09	24	52.17
Increased responsibilities	4.00	3.09	2.00	10	21.73	23	50.00	13	28.26
Periods of inactivity	5.00	2.93	1.00	14	30.43	18	39.13	14	30.43
Difficulty with colleagues	5.00	2.87	1.00	21	45.65	8	17.39	17	36.95
Negative attitudes towards Educ. Dept.	5.00	3.26	1.00	10	21.73	18	39.13	18	39.13
Not enough staff	5.00	3.24	1.00	10	21.73	19	41.30	17	36.95
Making critical on-the-spot decisions	5.00	3.22	2.00	9	19.56	21	45.65	16	34.78
Insults from colleagues	5.00	3.24	1.00	14	30.43	9	19.56	23	50.00
Lack of participation	5.00	3.13	1.00	15	32.60	12	26.09	19	41.30
Inadequate salary	5.00	4.00	1.00	4	8.69	7	15.21	35	76.09

Table 3 continued

Sources of stress	Max	Mean	Min	Stress intensity					
				Low		Moderate		High	
				N	%	N	%	N	%
Competition for advancement	5.00	3.26	1.00	9	19.56	17	36.95	20	43.48
Inadequate supervision	5.00	3.13	1.00	14	30.43	16	34.78	13	28.26
Noisy work area	5.00	3.50	2.00	10	21.73	13	28.26	23	50.00
Frequent interruptions	5.00	3.35	2.00	10	21.73	14	30.43	32	69.57
Frequent changes from boring to most challenging activities	5.00	3.24	1.00	12	26.09	15	32.60	19	41.30
Excessive paperwork	5.00	3.41	1.00	12	26.09	19	41.30	15	32.60
Meeting deadlines	5.00	3.35	1.00	6	13.04	17	36.95	23	50.00
Insufficient personal time	5.00	3.34	1.00	6	13.04	19	41.30	21	45.65
Covering for other teachers	5.00	3.24	1.00	9	19.56	19	41.30	18	39.13
Poorly motivated colleagues	5.00	3.28	1.00	13	28.26	14	30.43	19	41.30
Conflicts with other departments	5.00	3.13	1.00	14	30.43	9	19.56	18	39.13

Table 4 Results of *t* tests

Variable	Mean (School type 1)	Mean (school type 2)	SD (school type 1)	SD (school type 2)	<i>t</i>	Df	<i>p</i>
Occupational stress	108.12	99.02	12.53	12.39	3.61	77	> 0.05
Collegial leadership	22.18	26.76	5.54	3.31	-4.59	77	< 0.01
Professional teacher behaviour	21.51	26.44	4.73	3.25	-5.46	77	< 0.01
Achievement press	17.42	25.02	5.32	3.94	-7.30	77	< 0.01

Table 5 ANOVA results

Item	DF	SS	MS	F	Prob F %	School means				LCL				UCL			
						1	2	3	4	1	2	3	4	1	2	3	4
29	3	19.46	6.49	6.31	0.07	4.36	3.89	2.90	3.58	3.82	3.43	2.45	3.18	4.90	4.36	3.35	3.97
8	3	18.75	6.25	5.94	0.11	4.14	3.79	2.75	3.58	3.60	3.32	2.29	3.18	4.69	4.26	3.21	3.98
19	3	18.23	6.08	5.61	0.16	4.79	4.42	4.25	3.50	4.23	3.95	3.79	3.09	5.34	4.90	4.71	3.91
17	3	13.56	4.52	3.93	1.15	4.36	3.58	3.20	3.27	3.79	3.09	2.72	2.85	4.93	4.07	3.68	3.69
25	3	10.31	3.44	3.75	1.44	4.07	3.26	3.20	3.04	3.56	2.83	2.77	2.66	4.58	3.70	3.63	3.41
3	3	8.43	2.81	3.37	2.28	4.29	3.95	3.65	3.38	3.80	3.53	3.24	3.03	4.77	4.36	4.06	3.74
21	3	11.80	3.93	3.32	2.42	3.43	3.95	2.85	3.35	2.85	3.45	2.37	2.92	4.01	4.44	3.33	3.77
22	3	10.05	3.35	3.23	2.72	4.14	3.95	3.15	3.77	3.60	3.48	2.70	3.37	4.69	4.41	3.60	4.17
10	3	7.99	2.66	3.15	3.00	3.71	3.89	3.70	3.12	3.22	3.47	3.29	2.76	4.20	4.32	4.11	3.47
18	3	11.92	3.97	2.82	4.44	3.71	4.00	3.25	3.04	3.08	3.46	2.72	2.57	4.35	4.54	3.78	3.50
28	3	8.78	2.93	2.72	5.07	4.14	3.47	3.25	3.23	3.59	3.00	2.79	2.83	4.70	3.95	3.71	3.64
26	3	7.09	2.36	2.45	7.01	3.50	2.74	3.40	3.42	2.98	2.29	2.96	3.04	4.02	3.19	3.84	3.81
5	3	6.50	2.17	2.36	7.86	4.43	3.63	3.65	3.77	3.92	3.19	3.22	3.39	4.94	4.07	4.08	4.14
6	3	4.75	1.58	2.14	10.27	4.14	3.79	3.40	3.65	3.68	3.40	3.02	3.32	4.60	4.18	3.78	3.99
15	3	6.75	2.25	2.04	11.59	3.64	3.84	3.05	3.38	3.08	3.36	2.58	2.97	4.20	4.32	3.52	3.80
23	3	5.81	1.94	2.02	11.76	3.43	3.68	3.00	3.62	2.91	3.24	2.56	3.23	3.95	4.13	3.44	4.00
9	3	6.22	2.07	2.01	11.94	2.71	3.42	3.40	2.96	2.17	2.96	2.95	2.57	3.25	3.88	3.85	3.36
14	3	7.57	2.52	1.97	12.55	3.93	3.58	3.00	3.46	3.33	3.06	2.50	3.02	4.53	4.10	3.50	3.90
16	3	4.08	1.36	1.46	23.21	3.43	3.32	2.90	3.46	2.91	2.87	2.47	3.08	3.94	3.76	3.33	3.84
2	3	4.61	1.54	1.45	23.52	2.93	3.68	3.35	3.35	2.38	3.21	2.89	2.94	3.48	4.15	3.81	3.75
13	3	6.19	2.06	1.31	27.60	2.79	3.47	2.75	2.96	2.12	2.90	2.19	2.47	3.45	4.05	3.31	3.45
7	3	2.55	0.85	0.92	43.32	3.93	3.42	3.60	3.46	3.42	2.98	3.17	3.09	4.44	3.86	4.03	3.84
12	3	2.05	0.68	0.63	60.05	2.86	3.26	2.85	3.00	2.30	2.79	2.38	2.59	3.41	3.74	3.32	3.41
24	3	2.11	0.70	0.58	62.76	3.43	3.11	3.05	3.38	2.84	2.60	2.56	2.96	4.01	3.61	3.54	3.81
11	3	1.22	0.41	0.54	65.83	3.07	3.37	3.05	3.12	2.61	2.97	2.66	2.77	3.54	3.77	3.44	3.46
1	3	1.49	0.50	0.51	67.33	3.29	3.68	3.55	3.42	2.76	3.24	3.11	3.04	3.81	4.13	3.99	3.81
30	3	2.00	0.67	0.46	71.32	3.29	3.37	2.95	3.27	2.64	2.82	2.41	2.80	3.93	3.92	3.49	3.74
4	3	1.18	0.39	0.41	74.78	3.07	3.42	3.35	3.38	2.55	2.97	2.91	3.00	3.59	3.87	3.79	3.77
20	3	0.57	0.19	0.15	93.22	3.07	3.11	3.25	3.27	2.46	2.58	2.74	2.82	3.68	3.63	3.76	3.71
27	3	0.41	0.14	0.14	93.64	3.29	3.33	3.45	3.27	2.76	2.87	3.01	2.88	3.81	3.80	3.89	3.66

Due to the large number of tests performed as a result of running an ANOVA on each of the 30 items, the chances of making a Type 2 error were raised. To reduce this risk, we used Bonferroni's multiple comparison adjustment and divided the 5% probability level by 30 (the number of tests) indicating that a 0.167% significance level would be appropriate. On the basis of this probability level, only three individual stressors emerged as significantly different across the schools, namely: Item 29 "Poorly motivated colleagues"; Item 8 "Lack of recognition for good work" and Item 19 "Inadequate salary".

Using a slightly less conservative confidence level of 2% for the cut-off point would add another two items to the above list: Item 17 "Personal insults from colleagues" and Item 25 "Excessive paperwork."

Subsequent to the ANOVA analyses, *post-hoc* tests, again using Bonfer-

roni's test were conducted on the items that emerged as significantly different, to establish where the differences lay. The results of the *post-hoc* tests are presented in Table 6.

Table 6 Results of the *post-hoc* analyses (Bonferroni's)

Item number	School comparison	Difference between means
8: Lack of recognition for good work	1 – 2	0.36
	1 – 3	0.54
	1 – 4	1.23*
	2 – 3	0.17
	2 – 4	0.92*
17: Personal insults from colleagues	1 – 2	0.78
	1 – 3	1.16*
	1 – 4	1.09*
	2 – 3	0.38
	2 – 4	0.31
19: Inadequate salary	1 – 2	0.36
	1 – 3	0.54
	1 – 4	1.29*
	2 – 3	0.17
	2 – 4	0.92*
25: Excessive paperwork	1 – 2	0.81
	1 – 3	0.87
	1 – 4	1.03*
	2 – 3	0.06
	2 – 4	0.22
29: Poorly motivated colleagues	1 – 2	0.46
	1 – 3	1.46*
	1 – 4	0.78
	2 – 3	0.99*
	2 – 4	0.32

From Table 5 it is evident that:

- School 4 differs from schools 1 and 2 on recognition for good work;
- School 1 differs from schools 3 and 4 on personal insults from colleagues;
- School 4 differs from schools 1 and 2 on inadequate salary;
- Schools 1 and 4 differ on excessive paperwork; and
- School 3 differs from schools 1 and 2 with regard to poorly motivated colleagues.

Discussion

The results indicated that the experience of occupational stress was similar across the different school types assessed, with virtually all the stressors within the occupational stress survey perceived as highly stressful by all the teachers in the sample. Organisational climate, specifically collegial leader-

ship, professional teacher behaviour, and achievement press were found to differ significantly across the two school types.

The first finding of this study which is noteworthy to discuss relates to the descriptive statistics on the stressors experienced by the teachers. As can be seen in Tables 2 and 3, teachers across the board, from schools with high pass rates and from schools with low pass rates, experienced high levels of stress. Thus, in relation to research question 1, it appeared that sources of stress from the different schools did not differ widely. The notion that school teaching is a highly stressful profession is well established internationally (Kyriacou, 2001), and the findings of the current study added support to this contention within the South African context. Reducing work stress has become an item high on the agenda of many organisations in the corporate world, as they recognise the severe toll that stress can take on employee well-being and on productivity. Interventions ranging from reducing stressors at their source through job redesign to providing individuals with mechanisms to enhance their ability to cope with stress and its consequences through counselling and employee assistance programmes (EAPs) have become commonplace throughout the corporate world. Yet despite the research evidence, from the current research as well as previous research studies (Buwalda & Kok, 1991; Mwamwenda, Monyooe & Glencross 1997), that teacher stress in South Africa is extremely high, little appears to be done within the education sector to combat or ameliorate the high levels of stress that teachers experience.

With regard to research question 2, it was observed that, with few exceptions, overall levels of stress in the different types of schools assessed during the study did not differ significantly from one another. Given the high levels of stress experienced by the teachers across the board, this is perhaps not surprising. Even assessing differences at the item and school level rather than the high level findings of total stress scores at the school-type level failed to identify substantial numbers of stressors that differed across the schools. The items that did distinguish between the schools were 29 "poorly motivated colleagues", 8 "lack of recognition for good work", and 19 "inadequate salary" at the stricter significance level as well as 17 "personal insults from colleagues" and 25 "excessive paperwork" at the less conservative significance level. There appeared to be no discernable pattern underlying these items that may explain their emergence as distinguishing characteristics. They cover disparate issues, ranging from working conditions to colleague relations to administrative burdens. The lack of a distinguishable underlying structure suggests that these concerns may be idiosyncratic to particular schools and their particular circumstances, rather than systematic differences in the perceived stressfulness of the demands.

Therefore, stress did not appear to be a distinguishing factor in terms of differentiating between the schools with different success rates. These findings suggest that the effects of teachers working under stressful conditions could be overridden by the positive perceptions of the climate of their schools, which will be discussed in more detail. It does not, however, mean that attention

should not be paid to teachers' work stress given the negative consequences that stress can still have for both employees and organisations.

While work stress did not appear to differ across the two school types in the current study organisational climate, operationalised as collegial leadership, professional teacher behaviour, and achievement press, clearly differed across the two types of schools (see Table 4). The research design for the current study was such that it was not possible to state categorically that the differences in organisational climate had actually caused the different matriculation success rates but this finding is certainly suggestive of the importance of organisational climate in creating more- or less-desired outcomes in organisations. This finding is also in line with previous research which has established a causal relationship between more positive organisational climates and improved performance. For example, Glisson and Hemmelgarn (1998) assessed the effect of organisational climate on the quality and outcomes of children's service agencies in public children's service agencies. They found that a positive organisational climate was the primary predictor of positive service outcomes — children's improved psycho-social functioning — as well as of service quality. On the basis of their research, they argue that attempts to improve the organisations that they assessed should focus on fostering positive organisational climates. Similarly, research by Dellar (1998/1999) on a sample of 30 secondary schools in Australia established the existence of an important relationship between organisational climate and the schools' capacity to undertake and sustain restructuring and improvement. Indeed, they argue that where an existing school climate is negative, it is necessary to start with interventions to improve the climate before proceeding with any other substantial school improvement initiatives. It is acknowledged that the two pieces of research just cited originated in countries outside of South Africa, with very different educational environments. However, the causal finding of the relationship between climate and performance established through these studies, together with the difference in school climate found between high and low performing schools in Limpopo, South Africa in the current study, seems to provide a strong indicator of the need to address school climate in any attempt to improve school functioning in South Africa. At the very least, it certainly suggests a need for further longitudinal research into the impact of school climate on school performance. At this time, the Ministry of Education is in the process of seeking interventions to improve the quality of education in South Africa. What the evidence presented here suggests is that any such interventions will need to acknowledge the role of organisational climate in school performance if they are to maximise their positive impact.

Overall, the findings of this study provide some useful, initial data on a very interesting phenomenon — the existence of vastly different success rates across schools which appear outwardly to be highly similar. What was clear from the outset of this study was that it was neither the availability of resources nor the quality of the students that distinguished between these schools. Their resources were very similar and they all drew from the same

pool of children in the Limpopo Province. The key strength of this study was in identifying the schools as providing a point of comparison that could yield extremely useful information for understanding the key drivers of success in schools, as well as in constructing a very tight research design that allowed for meaningful comparisons to be made. The findings certainly suggest some starting points for understanding what distinguishes between the two types of schools. However, the study had a number of limitations, which are briefly discussed. The first limitation has been referred to earlier in this discussion, i.e. the cross-sectional nature of the research design. As a result of this research design causality could be implied, intuitively, but could not be established statistically. While the two school types differed on school climate, it was not established that these were the actual causes of the poorer or more successful performance of the schools. One area for future research would be to utilise a longitudinal research design which would better allow for the establishment of the causes of different success rates. As mentioned previously, the national ministry is in the process of exploring a series of initiatives to improve matriculation success rates and these may provide an exciting opportunity for longitudinal research to explore further some of the issues raised in the current study.

A second limitation of this study relates to the atheoretical nature of the research. The variables were chosen on the basis of previous research, both in the corporate world and the educational sphere, which have identified stress and organisational climate as critical organisational behaviour variables which can have far-reaching implications for organisational performance. Having obtained some initial data on this through the current study, future research is needed to start developing and testing a theoretical framework/model of the determinants of school matriculation success rates.

A third limitation of the research relates to the fact that the data were collected using measuring instruments designed overseas. While there has been some research dedicated to understanding South African teachers' unique experiences and challenges, still more could be done to develop reliable and valid South African measures of teacher stress and school climate, which may provide more insight into the conditions under which South African teachers work, and how these can be improved — to the benefit of learners.

The relatively low response rate of the one problematic school was also an important limitation. The individuals who did not respond might have made a difference in terms of the results. The low response rate may also have been an indicator of existing organisational culture and the reasons for the non-response may also be the reason why their school is unsuccessful. Due to ethical considerations, it would have been inappropriate to either place pressure on the teachers to participate in the study or to try and identify those who had, or had not, responded.

Finally, this research adopted a quantitative paradigm from which to explore the areas of interest. This was an appropriate technique to use for a comparative analysis and generated some useful information. A shortcoming of quantitative research, however, is that depth and richness of information

are sacrificed for a tight, rigorous design. One avenue for future research would be to utilise triangulation in the research design and supplement quantitative findings with in-depth interviews or focus groups in order to attain greater insight and understanding of teachers' differential experiences of schools with different success rates.

Conclusion

The statistics presented at the beginning of this article are evidence that South African education is in a parlous state. Interventions are urgently needed to ensure that South Africa develops an education and school system capable of meeting the demands of a 21st-century economy. The matric pass rate in particular is a critical benchmark used to assess learners' performance and to assess the performance of the schools from which these learners come (Kanjee, 2004). By assessing teachers' experiences of schools with vastly differing matric success rates, we attempted to identify some of the factors that may be distinguishing between the schools and can therefore be used as a base for understanding what drives performance in some schools and undermines it in others. It is hoped that this study will provide some impetus for further research into school performance in South Africa and start providing some critical empirical evidence on which to base school-based interventions.

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